

In the claims

1. (Currently Amended) A laser diode assembly for high output power applications, comprising:

a carrier having a top and bottom, the top having a thermally conductive layer formed thereon, the thermally conductive layer sized for attaching at least two bonding members thereto;

a laser diode having a top and bottom, the bottom of the laser diode being electrically coupled to the carrier, the top of the laser diode having first and second thermally conductive pads formed ~~thereon~~ on opposing sides of the top, the first and second thermally conductive pads each sized for attaching at least one bonding member thereto;

a first bonding member thermally coupling the first thermally conductive pad to the thermally conductive layer; and

a second bonding member thermally coupling the second thermally conductive pad to the thermally conductive layer,

wherein at least one of the first and second bonding members carries an electrical signal.

2. (Original) The laser diode assembly of claim 1 wherein the carrier comprises an insulating material.

3. (Original) The laser diode assembly of claim 1 wherein the carrier comprises a material selected from the group consisting of Si, diamond, SiC, AlN, and BeO.

4. (Previously Canceled)

5. (Canceled)

6. (Original) The laser diode assembly of claim 1 wherein the laser diode further comprises a laser ridge formed therein.

7. (Previously Amended) The laser diode assembly of claim 6 wherein the laser ridge is formed between at least a portion of the first and second thermally conductive pads.

8. (Previously Amended) The laser diode assembly of claim 6 wherein at least one of the first and second bonding members thermally couples its respective thermally conductive pad to the conductive layer without passing over the laser ridge.

9. (Previously Amended) The laser diode assembly of claim 6 wherein the laser ridge is formed substantially near the top side of the laser diode.

10. (Previously Amended) The laser diode assembly of claim 1, wherein the laser diode further comprises first and second electrodes, and the first and second thermally conductive pads are coupled to one of the first and second electrodes.

11. (Previously Amended) The laser diode assembly of claim 1, wherein at least one of the first and second thermally conductive pads is constructed and arranged to dissipate heat resulting from internal power production of the laser diode.

12. (Previously Amended) The laser diode assembly of claim 1, wherein at least one of the first and second bonding members comprises a length of thermally conductive material selected from the group consisting of wire, ribbon, braid, filament, fiber and tape.

13. (Previously Amended) The laser diode assembly of claim 1, further comprising a third bonding member electrically coupling at least one of the first and second conductive pads to the conductive layer of the carrier.

14. (Previously Amended) The laser diode assembly of claim 1, wherein the thermally conductive layer of the carrier comprises separate first and second portions, wherein at least one of the first and second bonding members is thermally coupled to the first portion and at least one of the first and second bonding members is thermally coupled to the second portion.

15. (Original) The laser diode assembly of claim 14, wherein the first portion is electrically isolated from the second portion.

16. (Previously Amended) The laser diode assembly of claim 1 wherein the carrier is constructed and arranged to transfer heat from thermally conductive layer to the bottom of the carrier.

17. (Original) The laser diode assembly of claim 16 further comprising a heat sink operably coupled to the bottom of the carrier.

18. (Original) The laser diode assembly of claim 17 further comprising a thermo electric cooling (TEC) device operably coupled to the heat sink.

19. (Original) The laser diode assembly of claim 1, wherein the laser diode further comprises an n-side and a p-side, and at least one of the first and second conductive pads is disposed substantially on the p-side of the laser diode.

20. (Original) The laser diode assembly of claim 1, wherein the laser diode further comprises an n-side and a p-side, and at least one of the first and second conductive pads is disposed substantially on the n-side of the laser diode.

21. (Canceled)

22. (Canceled)

23. (Original) The laser diode assembly of claim 1, wherein at least one of the first and second bonding members comprises a set of at least two bonding members.

24. (Original) The laser diode assembly of claim 23 wherein the number of first bonding members is equivalent to the number of second bonding members.

25. (Original) The laser diode assembly of claim 23, wherein the number of first bonding members is not equivalent to the number of second bonding members.

26. (Original) The laser diode assembly of claim 1 wherein the laser diode is a 980-nm pump laser diode.

27. (Original) The laser diode assembly of claim 1, wherein the laser diode is part of a semiconductor optical amplifier.

28. (Original) The laser diode assembly of claim 1, wherein the laser diode is part of a semiconductor modulator.

29. (Original) The laser diode assembly of claim 1 wherein the laser diode operates over at least a portion of the ultraviolet to far infrared wavelength range.

30. (Original) The laser diode assembly of claim 1 wherein the carrier is structured and arranged for mounting a laser diode thereto.

31. (Canceled)

32. (Previously Amended) A laser diode assembly, comprising:  
a carrier structured and arranged for mounting a laser diode chip thereto, the carrier comprising a first electrode area, a second electrode area, and a thermally conductive area;  
a laser diode having a first side attached to the second electrode area of the carrier and having a second side comprising first and second thermally conductive pads;  
a first bonding member coupling the first thermally conductive pad of the laser diode to the first electrode area of the carrier; and  
a second bonding member coupling the second thermally conductive pad of the laser diode to the thermally conductive area of the carrier.

33. (Currently Amended) A laser diode assembly, comprising:  
a carrier having a thermally conductive layer formed thereon;  
a laser diode electrically coupled to the carrier; and

a means for transferring heat generated at the diode to the thermally conductive layer on the carrier, the means for transferring heat being thermally coupled to the carrier from the laser diode,

wherein the means for transferring heat comprises first and second thermally conductive pads disposed on a side of the laser diode and first and second bonding members coupling the first and second thermally conductive pads of the laser diode to the conductive layer on the carrier.

34. (Previously Amended) The laser diode assembly of claim 33, wherein the carrier is constructed and arranged to convey heat transferred to the thermally conductive layer to a means for cooling.

35. (Canceled)

36. (Previously Amended) The laser diode assembly of claim 33, wherein the laser diode further comprises a laser ridge formed between the first and second thermally conductive pads.